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A REVIEW OF EMERGENT LITERACY WITH IMPLICATIONS FOR RESEARCH AND PRACTICE IN READING

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Abstract

Emergent literacy research is reviewed and related to studies on reading and writing processes and beginning reading and writing instruction. The first section describes the social and linguistic contexts for literacy. This research shows that communication patterns and practices and parent-scaffolding of literacy activities for their preschool children are critically important events for literacy development. The second section on oral and written distinctions describes why literacy is not a simple extension of oral language. Written language contains new and difficult-to-learn concepts. The third section reviews research on the acquisition of emergent reading and writing skills and knowledge. The fourth section presents examples of landmark instructional studies that adopt an emergent literacy perspective.

A Review of Emergent Literacy with Implications for Research and Practice in Reading

Current interest in what young children know and how they learn was anticipated many years ago by John and Evelyn Dewey (1915/1962) when they wrote:

> Rousseau was almost the first to see that learning is a matter of necessity; it is a part of the process of self-preservation and of growth. If we want, then, to find out how education takes place most successfully, let us go to the experiences of children where learning is a necessity, and not to the practices of the schools where it is largely an adornment, a superfluity and even an unwelcome imposition. (p. 2)

Increasingly, reading researchers are adopting Dewey's perspective, looking at literacy learning before young children receive formal reading and writing instruction. This area of study which is coming to be known as emergent literacy replaces the terms "reading readiness" and "early reading and writing." According to Teale and Sulzby (1986), emergent literacy was coined by Clay (1966). "Emergent" denotes the process of becoming, and "literacy" denotes the interrelatedness of writing and reading in young children's development. The study of emergent literacy represents "a new perspective which stresses that legitimate, conceptual, developmental literacy learning is

occurring during the first years of a child's life" (Teale & Sulzby, p. 28).

Prior to the 1970's, research on beginning reading focused on first grade instruction. Most young children were not thought able to read or understand what it means to read or write until they were taught in first grade. For example, research on reading awareness by Denny and Weintraub (1966), Downing (1969), Johns and Ellis (1976), G. Mason (1967), and Reid (1966) suggested that young children could not describe how they were learning to read. Durkin (1966) tested over 9500 entering first grade children on their ability to read a set of sight words and found only 229 who could read at least 18 of the words. These atypical children were termed "children who read early." In Gibson and Levin's (1975) report of Read's (1971) work showing that young children invent their own phonetically regular spelling systems, the subjects were characterized as "not run-of-the-mill children" (p. 253).

Research in the 1980's has focussed on precursers of literacy and influences of the home on later reading and writing. This has occurred in part because broader definitions of reading have been construed, a larger number of tasks have been given to children, longitudional studies have been conducted, and approaches have been developed that secure the maximum understanding of what the child knows. This research has made apparent that preschool children make recognizable story reading

attempts before they can read lists of words (Sulzby, 1985, 1986a), and their scribbles and invented spellings of words anticipate conventional writing (Temple, Nathan, & Burris, 1982). Moreover, interviews with kindergarten children provide reliable descriptions of how they are learning to read (Stewart, 1986).

In this chapter, we review emergent literacy research and attempt to mesh it with more traditional studies on reading acquisition. The first section regarding the social and linguistic contexts for literacy acquisition shows that communication patterns and practices, parent-child interactions, and parent-child literacy activities are critical supports for the acquisition of reading and writing concepts. The second section on oral and written distinctions explains that literacy is not a simple extension of oral language because written language contains concepts that are new and often difficult to learn. The third section reviews the acquisition of early reading and writing skills. The chapter concludes with examples of instructional studies that adopt an emergent literacy perspective.

Throughout this chapter more descriptive than experimental research is reviewed. One reason is that emergent literacy represents a new perspective. Establishing this perspective involves the development of new constructs and linkages among causative factors, a step that is usually initiated with descriptive research techniques. In addition, a larger number of

variables that affect later reading and writing success are being studied. These include oral language, story listening comprehension, and error patterns in early attempts to write and read. Beginning reading research, by contrast, has been more narrowly directed to letter and word recognition. Finally, emergent literacy research is attemting to trace influences on reading and writing of the home and community which involves analyses of social class and cultural attitudes as well as language patterns. Appropriate experimental research will undoubtedly emanate from the descriptive studies.

The Social Context for Literacy

We cannot consider the literacy of a child or an adult without also considering the context and perspective or purpose in that community. Guthrie and Kirsch (1984) state, "The environment, the social expectations, and the reading activities that others may expect are crucial in determining whether a person is literate" (p. 353). Differing social expectations, for example, have kept the definition of literacy in flux (Clifford, 1984; Resnick & Resnick, 1977; Scribner, 1984). In 1951, the UNESCO definition of literacy was the reading and writing of a short personal statement. In 1962 the definition was modified to include the various skills of reading, writing, and math necessary for a person to function effectively in group and community settings, and the actual use of literacy skills for personal and national development.

Purposes for becoming literate vary both within and across countries, and these purposes affect literacy practices and achievement. Downing (1973) pointed out that in Israel, Jewish children must learn to read Hebrew early in order to read the Bible, even though they do not speak Hebrew. In Japan, reading instruction emphasizes moral development through story selection (Sakamoto & Makita, 1973). Cultural values and socialization are stressed in India's primers. In the United States, although identifiable cultural attitudes are not readily apparent today (Blom & Wiberg, 1973), school reading books have in the past emphasized religious, moral or patriotic values (Smith, 1965).

Literacy acquisition is further complicated because the value of literacy is not the same for all members of a society. While it is accepted as a matter of individual difference that some people value literacy for themselves more highly than do others, the darker side of the issue is that some educational policymakers systematically discourage certain groups from learning to read and write. In Nepal, as in much of India, lower caste children, especially girls, are not encouraged towards literacy (Junge & Shrestha, 1984). Minority cultures in the United States as well as other countries have often received inadequate reading and writing instruction. There is some historical evidence that literacy is intentionally restricted by the literate few in power if they feel threatened by illiterate factions (Goody, 1968; Downing, 1973). Goody, for example, noted

that it took each Chinese "wise man" about 20 years to master the 50,000 characters necessary to be considered fully literate, and that it was this upper echelon who fought any changes in the ideographic system. Now with a national goal of widespread literacy in the Peoples Republic of China, a simplified writing system is introduced to beginning readers and writers (Jiang & Li, 1985).

In developing countries such as Iran, Chile and Hindi-speaking India, where education has barely had an impact, most homes do not or cannot support literacy (Thorndike, 1976). Feitelson (1985) warns that in societies that have accepted large numbers of families from underdeveloped countries, such as Israel, the literate traditions valued by the main culture may be missing among immigrants, due to different traditions or situational factors such as poverty. Her fear is that studies of well educated parents in mainstream cultures whose young children easily make the transition to literacy do not inform teachers about how to work with children from less literate families.

McCullough (1973) illustrated with an anecdote the strength of parental attitudes towards literacy learning. "Before my brother was born, my mother ate gristle and read a complete set of Shakespeare, hoping to make her baby physically strong and a person of taste and competence in reading" (p. 119). McCullough went on to contrast parental attitudes in Scotland and England with those in India where she was involved with an early literacy

program. Whereas it was common practice for British parents to help their children prepare the next day's reading lesson, there was a 40% dropout rate in Indian first grades because many parents needed children to work at home or in the fields.

Clay (1971) investigated home influences on several aspects of oral English development, reading, auditory memory and visual perception in five and six year old children with four different language backgrounds. Two groups were Polynesian, two were Pakeha (the Maori word for New Zealand whites). One Polynesian group was the Maoris, with a rural heritage and little command of Maori, a dying language. The other Polynesian group was the Samoans, with 75% speaking fluent Samoan and all having a history of parental educational support. The Pakehas ranged from very proficient to average in oral English. All were being taught in whole language classrooms.

Clay found that whereas the Maori children exhibited superior oral language development in English than the Samoan children at age five and six, at age seven the two groups were about equal and the Samoan children had made significantly better progress in reading. In fact their progress was equal to that of the average Pakeha group. Clay proposed that a critical difference was the parental attitude of Samoans favoring education and their influence as models for reading (at church) and writing letters home (to Samoa). These parents augmented the vital role of "literate other."

In a study directly examining the effect of parental involvement on reading achievement, Sakamoto (1976) found that the earlier Japanese parents begin reading to their children, the more fluently the children read by five years of age, a year before formal reading instruction begins. Japanese parents often read to infants; by the time children are one year old, 36% of parents have begun reading. Most parents buy books and subscribe to magazines aimed especially at the four- to six-year-old audience. Parents do not report "teaching" reading, but they think it important to read aloud, to give children their own books and letter/word/picture blocks, and to answer their children's questions. In Japan, which has exceedingly high rates of literacy, parental encouragement and help with homework is apparently a common practice not only for learning to read, but for learning the difficult writing system.

Thorndike (1976) examined reading comprehension in fifteen countries and found two family factors that predict reading achievement, socioeconomic level and availability of print in the home. In comparing literacy development in England, Scotland and Wales, Goodacre (1973) found that home support, especially the amount of time fathers spent reading with their children, is a significant factor in the higher reading achievement of Scottish children. A meta-analysis of almost 200 studies (White, 1982) indicates that family characteristics, such as academic guidance, attidude toward education and aspirations of parents for child,

conversations in the home, reading materials and cultural activities, contribute more directly to early reading achievement and account for considerably more variance than socioeconomic status.

These studies reveal that literacy experiences are intertwined with societal expectations. Thus, using correlational studies to study the impact of social context on literacy learning is extremely difficult because the home variables that make a differences are not easily manipulated. In the conduct of training studies, it may be useless to supply reading materials or instructional procedures to parents if the parents do not believe in the value, for themselves and their children, of becoming literate. However, there are researchers who have taken account of what families and communities believe about literacy and the uses they have for it before attempting to design an instructional approach. Similar research is needed to examine the role of the schools in providing literacy experiences and instruction for children who have not had these experiences at home. This is especially important in communities where literacy is viewed as pointless or even detrimental to social acceptance.

Linguistic Context for Literacy

It is generally assumed that literacy is associated with a distinctive mode of thought and language (Olson, 1977, 1984; Yaden & Templeton, 1986). Literate adults know that language has

structure, and that it is comprised of meanings which must to some extent be created or inferred by the listener and reader. Moreover, literate adults use metalinguistic terms, words that reference language, in their talk to children. These include metalinguistic nouns such as word, sentence, letter; metalinguistic verbs such as say, ask, assert, request; and metacognitive verbs such as believe, desire, intend, mean, think, now, pretend, wonder, decide, realize, remember, doubt.

An ability to reference language is thought to be learned to varying degrees depending on the extent of language instruction provided by parents. Based on research reported by Torrance and Olson (1985), Olson (1984) argues that learning to read is affected directly by the extent of the deliberate language instruction provided by parents. That is, as children learn a set of concepts about language, and explicit terms for expressing these concepts, they apply these ways of thinking about language structure and meaning to written language.

Wells (1981, 1985) proposes three major phases of linguistic development. His third phase is similar to Olson's notion that language becomes an analytic tool. First, he believes, children discover that patterns of sound take on meaning and purpose and that language represents or stands for objects and events. The second phase is consolidation of language and then diversification. Children listen to and use language conventions to interpret the required social contexts. Third, children learn to detach

language from the immediate context. They become conscious of their own mental states, are able to reflect on their own experiences, separate thought from action, and separate language from its context. Wells concludes, as does Olson, that with the acquisition of literacy comes the "ability to abstract linguistic expressions from the particular content and contexts to which they initially referred . . . [so] with the acquisition of literacy comes a more detached and reflective attitude to experience and this, in turn, promotes higher levels of cognitive functioning" (Wells, 1981, p. 243). The importance of reflection is echoed by Ferreiro and Teberosky (1982) who note that "it is not enough to have a language; it is also necessary to reflect on the language and thus become aware of some of its fundamental properties" (p. 284).

How do children become reflective language users? Halliday (1975) speculates that children have an ability as problem solvers, coupled with a need to gain control over their own environments, which leads them to language awareness. Vygotsky (1962) explains the process in terms of language functioning. He proposes that children first learn words and their meanings for social contact and communication purposes. Around age four, they begin to construct speech for themselves (egocentric speech), and their expressions are turned inward as they try to grasp and remedy situations. In this way speech is "taking on a directing, planning function and raising the child's acts to the level of

purposeful behavior" (p. 17). This inner speech serves the reflective or metacognitive purposes of planning, monitoring, and evaluating.

A contrasting view is presented by Olson (1984) who argues that literate parents do not merely allow language to unfold but set about deliberately teaching it. He cites as examples of instruction how parents play word-naming games with their children and shift to more complex language as their children are able to talk.

The ways children learn about language and books are deeply embedded in the family communication patterns (Heath, 1982, 1983; Ninio & Bruner, 1978; Snow, 1983; Schieffelin and Cochran-Smith, 1984; Teale, 1986). Because a community's ways of using printed materials are not separable from the ways the children learn to talk, both being acquired through social interaction, it is not possible to separate oral traditions from literacy. They are intermingled. Observations by Teale in 22 homes revealed literacy-related domains that include: daily living routines, entertainment, school-related, work, religion, interpersonal communication, and storybook time. Ninio and Bruner and Snow focus narrowly on storytime reading, which is a common literacy event in mainstream (middle class) communities is the bedtime story. Here, a structured interaction occurs between adult and child with a dialogue which involves questions, comments about the connections between the text and the child's experience, and

labeling of pictures and printed words. Heath reports that family literacy events for preschoolers are bedtime stories, reading cereal boxes, stop signs, and television ads, and interpreting instructions for commercial games and toys. There are socially established rules for verbalizing what children know from and about the written material.

Among children in a working class white community, by contrast, there are not extensive parent-child literacy events. Parents make less use of literacy sources and are more likely to direct the child what to do than to explain how to do something. They expect the child to learn by watching rather than through verbal interaction. Books and other print materials may be listened to but not used for creation of stories.

Similarly, children in working class Black families, according to Heath, are less likely to learn through parent-guided small steps. Talk that is addressed to them is seldom simplified, and children's reading materials are often not available. In learning to talk, Black children from these families are asked to accomplish a more difficult task, that of understanding larger sections of speech. As a result, they often capture intonation patterns before words. They are less often asked for explanations such as, "What is that called?", than for analogical questions that call for nonspecific comparisons of items, events, or people (e.g., "What's that like?" or "How come you did that?") (examples from Heath, 1982). The questions they

hear are dissimilar from questions that teachers ask, so that answering lower-order questions at school is more difficult for them. Moreover, while parents accept children's stories and talk about children's experiences, they are not likely to tutor or relate them to books or other literate events.

In all likelihood, language awareness occurs through self-directed efforts, as Vygotsky and Halliday propose, as well as through deliberate instruction, as Olson suggests, and as part of the cultural milieu, as Heath points out. Case studies by Bissex (1980) and Soderbergh (1977), for example, show that linguistic and written language constructs develop concurrently. Although there are untutored components to language development, there are also aspects taught by parents, such as metalinguistic terms, that may be important for later reading and writing. Tracing this connection has begun in longitudinal studies, and needs to be followed up experimentally. For example comparisons could be made between preschool programs that focus on metalinguistic constructs with those that do not, evaluating both short and long term changes, first of language and listening comprehension, and then of reading. In ways such as these the presumed links between metalinguistic knowledge and later reading success might be better understood.

Oral and Written Language Distinctions

In reviewing oral language acquisition and its implications for written language learning, Wardhaugh (1976) points out that

neither oral nor written forms of learning are simply matters of repetition, imitation, or expansion of words heard or read, but rather that learning centers around meanings. An illustration in the case of written language can be found in Bissex's (1980) son's first written communication, RUDF. Paul had never seen this combination of letters in print before. But when he was unable to gain his mother's attention through speech, he communicated his need and frustration in writing with the succinct message, "aRe yoU DeaF?"

Speech and print are both vehicles of meaning, being at times playful, involving experimental endeavors, and requiring context for disambiguation. Both involve complex interactions of sounds, grammatical structure, and meaning-carrying connections to context, intention, and audience. Learning to talk, write, and read also involves invention of the language and a search for language patterns. A beginning talker may overgeneralize by adding "ed" to every verb to form the past tense; the beginning writer may put a silent e on many words; the beginning reader may, after reading help several times in one passage, miscue "helper" for Helicopter (Allen, 1984) or regularize the vowels in the word plaid, saying "played" (Mason, 1976). Finally, oral and written language learners use a kind of shorthand or telegraphic speech (e.g., "Daddy bye-bye" for "Daddy has gone bye-bye") and writing (e.g., captions and labels on pictures).

Nevertheless, since talking and reading are different processes and produce different outcomes (Akinnaso, 1982), it cannot be assumed that written language is acquired merely by applying knowledge about oral language constructs. Chafe (1985) suggests that two basic differences distinguish the linguistic properties of oral and written language. They are based on the fact that writing but not speaking is a slow and deliberate process and that it is usually a lonely activity, while speech can be casual and takes place in a social environment. Using Perena's (1984) framework of physical, situational, functional, form, and structural differences, we summarize these differences and then consider their implications for written language instruction in the classroom.

Physical differences. The most obvious difference between written and spoken language is that print is processed by eye and speech by ear (Kavanagh & Mattingly, 1972). Perena identifies several less obvious physical differences. Sounds are temporarily arranged in time whereas writing is permanently arranged in space. Readers can vary their speed whereas listeners cannot. The same language sample, for instance, a paragraph from a speech, may take six minutes to write but as little as one minute to read aloud and half a minute to read silently.

Because of differences in parental support for literacy, children come to school with varying concepts about these

physical differences. Ferreiro and Teberosky (1982) found that children varied in their ability to conceive of reading as voiceless, and to distinguish between oral conversation and a news item or fairy tale when an experimenter held and "read" from a newspaper or storybook. This failure of some children to pick up on physical clues to the nature of reading, or to resolve the conflict between the physical cues and the aural ones, suggests that teachers can not assume that physical differences will be obvious to all children. Rather, as Jagger and Smith-Burke (1985) suggest, teachers may need to assess children's level of understanding about this and other print concepts, in order to clarify and expand their understanding.

Situational differences. Oral language most often occurs in a face-to-face context. Readers and writers are usually isolated from each other. Whereas the audience for speech is almost always intended, except when a speaker is overheard, the audience for writing may be either intended or unintended. Writers cannot be confident that their readers have sufficient prior knowledge, whereas speakers either know or can actively assess the prior knowledge of their listeners.

Oral conversation is more dynamic than reader/writer encounters (Adams, Anderson, & Durkin, 1980), although Tierney and LaZansky (1980) point out that dynamic interaction is essential for good writing and meaningful reading. However, the context of most oral language provides immediate and fairly

obvious facilitation. The listener "reads" the speaker's gestures and facial expressions for added understanding, and the speaker "reads" the listener's face and reciprocal comments for feedback on clarity, tone, and impact. Language pointers, words like "this," "here," and "her," are often clarified through gesture during speech but could be vague in print (Halliday & Hasan, 1976). If speech referents are unclear, the listener has the option of asking for more information under the implicit turn-taking rules of conversation. The reader must make backward or forward searches of the text and may still end up imploring an unavailable author for a clearer framework.

In classrooms where reading and writing are daily, process-oriented communication events (Calkins, 1983, 1986; Cochran-Smith, 1984; Graves & Stuart, 1985), students do not appear to view writing as a lonely and isolated endeavor. When learning to read and write develop concurrently in an environment which Lindfors (1985) describes as continuous and dynamic, meaning focused, interactive, and creative, the contexts for oral and written language may be very similar.

Functional differences. People who have command of both oral and written language make choices about which mode is more appropriate for a particular function. People generally use oral language for face-to-face communication and written language when they wish to communicate with others over time or distance. Unique functions of writen language include recording and storing

information accurately, accumulating and building on previous knowledge as in science and history, and labeling streets, products and buildings. Writing may be a means for expanding one's own thinking. Reading can prompt comparisons and analysis.

There are also functional differences in children's use of language. According to Halliday (1977) children's oral language functions are: instrumental (to get something), regulatory (to control), interactional (to establish social relationships), personal (to express individuality), imaginative (to express fantasy), heuristic (to explore and learn), and informative (to communicate information). Tough (1977) found that most children can use oral language to maintain group status, to direct other people, and to talk about present events. However, some children are less able to use written language to verbalize past experiences, make associations involving predicting or analyzing, to collaborate verbally, or project from concrete experiences to new perspectives. Through extensive observation and categorization of the writing in her first grade classrooms, Milz (1985) identified six functions of children's written language that are comparable to Halliday's oral functions. Children establish ownership by labeling, they build relationships through notes and interactive journal entries, they remind themselves and others through notes to do things, they request information or assistance, they record information, and they create and fantasize through stories.

Smith (1984) argues that literate others, usually parents, lead children to an appreciation and understanding of the multiple functions of written language. However, if children have not had extensive interaction with literate others before they come to school, the teacher must become that person, pointing out varying functions for both oral and written communication, and relating children's reading and writing experiences to their functions.

Form differences. The 48 sounds we use in English speech are represented by 300 distinct letters or letter combinations in English orthography (Jenkinson, 1973). In print, each letter is a distinct visual form, and each word is distinct due to the convention of putting spaces between words. Other format characteristics of print include indentation, punctuation, and capitalization. In contrast, in speech there are no boundaries between phonemes, and even word boundaries may be obscured, as Ehri (1984) demonstrates in contrasting the written "Give me a piece of candy" with the spoken "Gimme a pieca candy."

Written language is more restricted in form than speech. Prosodic features such as pitch, timbre, quality, and loudness, and paralinguistic features such as intonation, stress, and rhythm are only minimally represented by word selection, word order, and punctuation in written language (Perena, 1984). In order to recover the cohesion present in oral language, writers turn to more complex structures such as "passives, variety of

tense forms, genitive structures, postpositional noun modifiers, nominalizations, verbalizations, variety of adjectival phrases, variety of subordinate phrases, phrases in apposition, logical and subordinate connectives" and other complex elements, all of which are more frequent in print than in speech (Jenkinson, 1973, p. 159).

An analysis of children's oral reading suggests that connecting the oral form to the written cannot be taken for granted. Clay (1985) found significant rate and accuracy differences between better and poorer readers on measures of juncture, pitch, and stress. For example, better readers read seven words before pausing while poor readers paused after nearly every word. Better readers also ended twice as many sentences with falling pitch, and read four times as many words per stress. Research is needed to determine whether children's reading would benefit if they were taught to capture prosodic features as they read, and if so, how.

Structural differences. Perena (1984) discusses both syntactic structure and discourse structure. In referring to syntactic structure, she notes that writers, lacking intonation, often place important elements at ends of sentences. While speakers tend to be highly redundant, writers strive to be concise. Speech is also more informal than writing as evidenced by the greater frequency of incomplete sentences, slang expressions, and meaningless vocalizations which function as

place holders allowing time for thought. Some elements of informal speech are consciously emulated in text, for example, dialect, contractions, and elliptical phrases, but these elements occur mainly in narrative texts.

Spoken and written language forms are also structured differently at a discourse level. Speakers present smaller amounts of information at a time, so they can monitor listener response, but may switch topics without notice. Writers rarely have a chance to interact with readers, so they present larger chunks of information and try to signal organization and topic shifts.

The transfer of discourse comprehension skills from listening to reading should be easiest for texts such as narratives because these contain structures commonly found in both speech and writing. However, because narratives are decontextualized stories, they have more complex characteristics, vary in arrangement of discourse order (e.g., flashback or flashforward) and in the development of authors' and characters' point-of-view (Brewer, 1985). Even more difficult are expository texts because children typically lack the necessary content as well as structural knowledge for comprehension (Bock & Brewer, 1985).

Children come to school with widely differing exposure to grammatical and discourse structures. Some may have rich and varied print experiences, some may have heard only oral stories,

and some may not have had much exposure to either written or oral texts. Repeated reading activities such as reading books over and over (Holdaway, 1979), reading a wide variety of discourse types including fantasy, informative and poetic texts (Watson, 1985), and reading patterned texts where children can internalize some written structures (Bridge, 1986; McCormick & Mason, 1984) are presumed to help children understand varying text structures.

Implications for literacy acquisition. Given that there are physical, situational, functional, formal and structural differences between oral and written language, what impact do these differences have on the way children learn to read and write? Although the communicative function of language might make the acquisition of written language a natural process (Goodman & Goodman, 1979), research suggests that its acquisition can be fraught with problems.

Dyson's (1984) observations reveal that children coming to school with meager literacy experiences have much to learn about print and are easily confused if they cannot map words onto their oral language or cannot recognize or distinguish letters. A kindergarten child was observed while he was attempting to carry out free writing and copying assignments in his classroom. Dyson found that the child ingeniously applied his little understanding of how written language functions symbolically. In attempting to write, for example, he used the appearance of letters to stand for the resembled word (0 for the word deer). He called on

letter names to represent whole words (R for the word are), and he focussed on content words and ignored functors. Although he misnamed letters and words, mixed letters with numerals, and ignored or misinterpreted spaces between words, when he was able to write freely he was able to connect print with his knowledge.

Ferreiro and Teberosky (1982) found that children who entered school without understanding the link between their oral language experiences and formal instruction did not advance at the same rate in learning to read and write as those who did make the connection. They suggest that instruction be designed to build on what children have already learned about print to help them link their experiences with speech to their reading and writing experiences.

Several studies have shown that when text is made more like speech, beginning readers can process it more readily. Tatham (1970) drew from Strickland's (1962) findings on frequent oral langauge patterns in designing materials for her study. She found that second graders comprehended test sentences written with frequent oral language patterns significantly better than sentences with infrequent oral language patterns. Using a technique of elicited imitation, Amsterdam (1985) had first grade children repeat and later recall, "Primerese" and "natural language" versions of fables. She found significantly more meaningful consolidation as well as more complete recalls and fewer unnecessary repetitions with the natural langauge versions of the texts.

Allen (1985) found that primary grade children performed better on inferential comprehension tasks when the texts were closely linked to their oral language. Seventy children varying in reading ability read three kinds of stories: their own dictated stories, peer-written stories, and textbook stories. Even the least-able readers inferred well when reading their own texts, and they inferred somewhat better on peer stories than on textbook stories.

Some success has also been obtained by designing beginning texts to lessen the differences between speech and print. Chesterfield (1978) designed "environmentally specific" materials in an attempt to close the "cultural and language gulfs" separating rural Brazilian children from their classroom texts and urban teachers. He changed the pictures and words in initial reading materials to reflect rural life but left the basic structure and situations intact. Subjects were 98 first grade students who ranged from six to eleven years of age (some had been held back in first grade). Four classrooms had experimental texts, and four had the regular texts. Following one year of instruction, subjects using experimental materials scored significantly higher on a reading posttest, and they used more words on a posttest writing sample in which they wrote about their best friend. They were equivalent to the others in the number of different words used and in grammaticality of sentence structure. Chesterfield notes that the gains are

especially significant given that the reading test was on regular, not environmentally specific, materials.

Because research in the area of oral and written language comparisons has been most extensive at the level of description, it is not certain which differences between oral and written langauge cause problems for children in learning to read and write. Put otherwise, connections which can made automatically or resolved without direct adult assitance need to be differentiated from those which require instruction or opportunity for practice. It is also unclear why some children have more trouble with these transfers than others and what manipulations of beginning reading materials such as Chesterfield's environmentally specific texts might be helpful for at-risk populations. We suggest that in areas where children experience difficulties in transferring from speech to print, research is needed to determine what are sources of the difficulty and how they might be helped.

Acquisition of Reading and Writing Concepts

Current research with adults and older children in cognitive psychology as well as linguistics has influenced research on emergent literacy. Studies of adult problem solving (Newell & Simon, 1972; Siegler, 1978), higher level cognitive structures to organize comprehension and memory processes (Anderson, Reynolds, Schallert, & Goetz, 1977), and strategies for thinking (Flavell, 1979) suggest that adults usually have effective strategies for

learning and remembering print. Children use less effective strategic techniques (Gelman & Baillargeon, 1983). Problem solving also involves flexible and appropriate use of strategies, and an ability to connect, extend and generalize what is being learned from the specific context in which it is learned to the wider contexts in which it is applicable (Brown, Bransford, Ferrara, & Campione, 1982). A question to be discussed subsequently is how a problem-solving approach might be adapted for reading and writing instruction.

Two processes are thought to be involved in literacy acquisition: the translation of written elements into speech and meaning-guided thinking (Perfetti, 1984), or decoding and comprehension (Gough & Tunmer, 1986). These processes are thought to develop interactively (Stanovich, 1980). Literacy acquisition is analogous to Vygotsky's (1962) notion that language is comprised of two components, word sounds and meanings. Vygotsky proposes that word sounds are learned beginning with small units (single words), while word meanings are learned beginning with the whole context in which the words appear. Similarly, we propose that reading is comprised of two components, word recognition and text meaning, and that word recognition proceeds from the smaller unit to the larger one while text meaning proceeds from the larger unit to the smaller. Word recognition is probably acquired through differentiation and recognition of letters, letter sounds, and individual words.

Later this is broadened to include an understanding of the regularity of letter patterns and how to map print onto speech. Print meaning is probably acquired first within larger contexts through hearing stories, interpreting and relating stories to personal experiences, and recognizing signs and labels in context. Later this is narrowed to critical analyses of texts and their characteristics. This two-component notion of literacy learning is discussed in relation to strategy thinking in the next two sections regarding the development of early reading and writing concepts. Further discussion of the two components is presented under the headings, Phonological and letter-sound and principles and Story-guided thinking.

Early reading development. Beginning reading in the United States has traditionally focused on decoding, that is, on an ability to recognize and use phonemes in identifying words. Chall (1979), for example, states, "The essential aspect of Stage 1 is learning the arbitrary set of letters and associating these with the corresponding parts of spoken words. In this stage, children and adults internalize cognitive knowledge about reading such as what the letters are for, how to know that bun is not bug, and how to know when they have made a mistake" (p. 39). Similarly, Gough (1972) says, "The Reader converts characters into systematic phonemes; the child must learn to do so. The Reader knows the rules that relate one set of abstract entities

to another; the child does not. The Reader is a decoder; the child must become one" (p. 526).

Although researchers who have studied emergent literacy accept decoding skill as part of learning to read, they disagree with those who adopt decoding skill as the measure of whether or not a child can read. Their research reveals that components of reading skill begin to emerge long before a child can decode words. They argue that the term "beginning reader" should be applied to children who would be classified by Chall (1979) as Stage 0 nonreaders, not just to children who have moved into the decoding stage.

Mason (1980) examined the emergence of reading-related capabilities in four-year-old children who were not able to decode words at the outset of the study. When asked to read words without context cues, their responses were entirely unrelated to the graphic structure of the words. Several months later, however, many tried to read words by applying an initial letter-sound strategy, that is, by using the name-sound of the first consonant of a word as the principal cue. For example, one child read may as "mister," and another said it was "mom." When they tried to spell, these children applied the same strategy of focusing on the initial sound of the word. They would whisper the word to themselves to hear the initial sound and usually choose a letter that represents the correct phonemic representation (e.g., B for ball or K for cat). Mason's results

reveal that there is a complex developmental history preceding the emergence of decoding skill.

A similar course of development in spelling is described by Ehri (1985) and Morris (1981). Ehri summarizes as follows:

> Once prereaders have learned letter names, they can use this information to invent semiphonetic spellings of words. They distinguish 1 or 2 sounds, usually the first or last, and represent these with letters . . . When children learn more about letter-sound relations and about phonemic segmentation and decoding, their spellings become more complete phonetically and the letters they choose are more conventional. For example, "giraffe" might be spelled GERAF. As children learn more about spelling patterns in English words, their commitment to the principle of one letter for every sound is relaxed, and they adopt morphemic as well as phonetic patterns to spell. (pp. 6-7)

A partial mapping of children's reading development in New Zealand is proposed by Clay (1967, 1979) based on weekly observations for a year of what children say and do in reading from the time they enter school at age five. She found reading to involve the integration of four sources of information: language, concepts about print, visual motor skills, and sound sequences in words. At first children believe that print can be turned into speech simply by their own language inventions.

Next, they begin to make up texts using written language structures and then try to tie their construction to the picture. Finally they begin to pay attention to print, using visual cues from letters.

Earlier phases of development in Argentinian children's acquisition of reading concepts are also identified by Ferreiro and Teberosky (1982). At first, print and pictures are not differentiated and a child will point to the picture when asked where there is something to read. Next, although print and picture are differentiated, the child will look at the picture and respond with picture information regardless of the graphic characters. Then the child will gradually consider graphic information.

A common finding in this research is that before children learn to decode words in and out of context, they become able to use some letter-sound information to recognize, remember, and spell words. This is possible even if they are not taught the letter sounds, because the names of the alphabet letters provide clues to the phonemic representations in words. For example, children may hear /j/ in the letter name "jay" and the word "jail" and connect the phoneme with the letter (Ehri, 1983; Ehri & Wilce, 1985).

Children's movement into reading is not marked by a clear boundary between readers and nonreaders. Very young children may know where there is something to read but be unable to read it.

Somewhat older children may be able to read words in context but not in isolation. Still older children may be able to read isolated words by storing partial letter-sound associations in memory, but they may not be able to read isolated words by decoding the letters into sounds. Which are we to consider readers and which are nonreaders? The term "beginning reader" has the same problem because there is no clear beginning point. Children begin acquiring knowledge about reading long before they begin formal reading instruction and long before they can exhibit any reading production skill. Reading acquisition is better conceptualized as a developmental continuum rather than the all-or-none phenomenon suggested by Chall's (1979) stages.

Early writing development. Literacy events almost always involve both reading and writing, either directly, as when young writers attempt to read and revise their written creations (Sulzby, 1986b), or indirectly, as when children's writing reflects elements of the texts they are learning to read (Eckhoff, 1984). They often develop concurrently (Bissex, 1980; Schickedanz & Sullivan, 1984; Taylor, 1983; Teale, 1986). Moreover, concepts about writing, graphic displays and discourse development have usually been investigated in conjunction with emergent reading concepts and behaviors. As a result, most of the research described next on emergent writing has been pulled from studies that include investigations of reading.

Emergent writing studies have documented what strategies children employ while attempting to write. A major question has been whether children progress through hierarchical levels, or contrarywise, show no stable pattern of development. The data seem to point to a middle ground, characterized by general but not exclusive shifts in development. For example, children scribble-write less as they learn conventional letter forms, but they do not abandon scribbling altogether.

Clay's (1975) research suggests that young writers use the following four strategies with increasing sophistication. Children establish a recurring principle when they grasp that certain patterns are used repeatedly in English. For example, a child might fill a page with similar lines of scribbles, or linear mode writing. By applying a generative principle, they can create unique messages with a limited set of letters or words repeated in different combinations. For example, a limited repertoire of letters or words may lead to a construction of other words by using only the letters in child's name or to patterned sentences such as, "I love Mom. I love Dad," etc. In grasping a sign principle, children make the crucial link between the concrete object and the abstract word. This is evident in labeled drawings. Clay's fourth inventory principle describes children's listing of words that they know, so that when asked to write something, unrelated words may be produced.

Ferreiro and Teberosky (1982) propose a developmental hierarchy of five levels of writing which is based on a year-long study of 30 working class first grade children and a cross-age study of over 70 four-to-six-year-old children from mainstream and working class families in Argentina. The children were asked to distinguish between drawing and writing, to write their own names and names of family members, to write familiar primer words and unfamiliar words, and to write a sentence.

The first level of writing involves the reproduction of writing features. For example, children may draw broken or connected lines to represent writing. At this level, children mix drawing and writing, but they can distinguish them. They believe that words must have a minimum number of letters, usually three, and that letter arrangements must always show variability. For example "AAA" has a sufficient number of letters to be a word, but there is no variability, so children at the first level would probably reject it as something to read. At the second level, letter forms become more conventional, and children become aware of the importance of letter order. At the third level, children develop the syllabic hypothesis, in which they record one letter per syllable. However, for one and two syllable words, this hypothesis contradicts the earlier formed minimum number hypothesis. The fourth level is the alphabetic hypothesis in which they resolve the conflict between the syllabic and minimum number of characters hypothesis by rejecting both and

using one letter for each sound they are able to hear. The final level is alphabetic writing in which children approximate the conventional writing system and are more directly influenced by what they read. Their incorrect spellings at this level include common spelling patterns rather than just phonemic representations.

Temple, Nathan, and Burris (1982) identify five levels of spelling strategies that evolve over a two year period, beginning typically at age four when children begin trying to print letters. Their levels correspond closely to those described in the emergent reading section. Temple et al. illustrate these developmental changes with the spellings for "dragon" from several children: The first level is prephonemic, i.e., a letter string such as MPRMRMH. Next is an early phonemic level, i.e., some letter-sound correspondence such as J. Children then move to letter-name spelling which has a close phonemic match, such as GAGIN. Transitional spelling mixes correct and invented spelling, as in DRAGUN. The final level is correct spelling.

These developmental changes are thought to be linked to children's background experiences and knowledge of writing strategies, not to their age. For example, Crenshaw's (1985) observations of kindergarten children's writing reveal a range from the use of random nonstandard forms to sound/symbol matching and conventional spellings. Similarly, Goodman (1985) analyzed writing samples from five groups of children, aged three to six,

78 altogether, including bilingual Chapter 1 children, inner-city and rural children, and children from the Papagos Indian reservation. She found children to be using a variety of strategies and forms based on their experiences with writing.

Sulzby (1985), who studied the story writing samples of 24 kindergarten children, identifies six categories of writing. These are drawing, scribbling, letter-like forms, well-learned units, invented spellings, and conventional spellings. She concludes that children build a repertoire of techniques to write that they can make use of selectively and that they show stability across time in drawing on these varied strategies. For example, a child might "inventory" known words in a conventionally-spelled list but use cursive-like scribbles, letter string, and invented spellings in writing a story.

Graves (1983) proposes that writing begins with spelling and moves through motor aesthetics, conventions, topic selection, adequate information, and revision. However, in his two-year study of children's writing, he observed that these categories often overlapped, and many children did not fit this ordering. Graves suggests six possible reasons for the absence of an invarient sequence: (a) handwriting and spelling remain central issues for some writers forever but become secondary in others by age seven; (b) children focus on what teachers emphasize; (c) if teachers do not respond to the child's focus, progress may be impeded; (d) all children have concerns in all areas, even though the primary

focus may be on one or two; (e) proficient writers also continue to have concerns at all levels; and (f) growth in one category may conflict with growth in other categories.

Integrated writing/reading research is needed to determine how reading and writing are intertwined in the learning process and how they might be assessed. We need to learn more about how reading activities might provide young writers with a repertoire of strategies that become more effective with experience and how writing activities might foster reading. Teachers need to know how reading and writing concepts might be taught together. For example, they should know how phonetic analysis, which is necessary for both reading and writing, might be taught concurrently and how they could help children make the connection between their invented spellings and letter sounds in reading. The role of teachers is also debated but is not resolved. Should teachers simply play the role of responders to what children are trying to write, arranging peer-directed conferences, and celebrate their writing attempts? Or should they question and challenge children's intents, model good writing and direct a use of new writing strategies? More research is needed in order for to answer questions such as these and to obtain successful writing programs in kindergarten and first grade.

Phonological and Letter-sound Principles

There is strong support for the notion that when children come to understand that words contain distinguishable phonemes

and that letters symbolize these phonemes in words, they shift toward more effective word recognition strategies. This was evident in an instructional study with entering first graders (MacKinnon, 1959). Those groups that learned phonologically regular materials were observed to omit and substitute words without realizing their errors at the outset of instruction. However, by the fourth week they were making graphic confusions and helping one another figure out many of the words using both letter-sound and context information. Changes in reading strategy errors were also identified by Biemiller (1970) and Weber (1970). In reading words in stories or in isolation, beginning readers were observed to shift during the school year from a focus on picture or whole word clues to graphic cues and letter-sound relations to a use that included text context.

Lundberg (1984) found that an awareness of words and phonemes was highly correlated ($r > .70$) with later reading achievement. Furthermore, of 46 children with low linguistic awareness scores and low reading scores in first grade, only 6 became average or above-average readers by sixth grade.

A strong relationship between phonemic awareness and reading achievement was also found by Juel, Griffith, and Gough (1985). Phonemic awareness was measured with subtests involving segmentation, blending, and deletion and substitution of the first and last phonemes (taken from a test developed by Roper-Schneider, 1984). Phonemic awareness contributed 49% of the

variance in a multiple regression analysis of end-of-first grade word recognition scores, after accounting for vocabulary (6% of the variance) and listening comprehension (13% of the variance). At the end of second grade it contributed less (30%). Zero order correlations between phonemic awareness and word recognition were high, .83 in first grade and .71 in second grade.

We suggest that the significant correlations between phonological awareness and word recognition are explained principally by children's knowledge about effective strategies for recognizing words. In one study, for example, Mason (1977) gave 40 children a set of 12 words to learn, some of which were in upper case, some in lower case, and some in mixed case. After they practiced identifying the words for four trials, another set of words was substituted in which the letter case was completely or partially changed (e.g., truck was now printed as TRUCK, BIKE became bike, tree became Tree, and Rat became rat). Children who could no longer identify the words were found to use nonphonetic strategies on the reading and spelling tasks. By contrast, children who could read the words after the case shift were found to use letter-sound clues on the other tasks.

A similar influence of strategy on reading was found by Peterman and Mason (1984) who tested 60 kindergarten children's word reading strategies. Children were given pictures in which printed labels under the picture either closely matched the picture (e.g., a picture of a beach ball was labeled ball) or

labeled only part of the picture (e.g., under a picture of a car was the label wheel). Children were asked to show the examiner where there was something to read, to tell what it said, and to explain how they knew it said that. It was hypothesized that children who do not rely on letter-to-sound relationships to identify words would misguess the unpredictable labels.

All but one child knew that the information to be read was in the print. However, 34% relied completely on the picture information. This was evident because they correctly labeled the predictable pictures (e.g., saying "ball" for the word ball) and misidentified every unpredictable label by substituting a predictable label for it (e.g., saying "car" for the word wheel). Another 34% made many mistakes, both on predictable and unpredictable labels, but their errors indicated an attempt to rely on the letter information (e.g, saying "white" for wheel). These children, by thinking of a word that began with the initial letter of the printed word, were beginning to use a strategy that focussed on letter-sound information. Twenty eight percent attempted to integrate print and picture. They correctly identified predictable labels and figured out or made good guesses for other words (e.g., saying "wagon" for wheel with the pictured car). The remaining 2% of the children were decoders and made essentially no errors on the task. Correlations between children's strategy level on this task and their total scores on a letter and word recognition test were .57 (Mason & McCormick,

1979). Moreover, when the children were retested four months later at the beginning of first grade, it was found that half had advanced to a higher leveled strategy.

Training studies also reveal the advantages of superior knowledge of letter-sound principles for reading and spelling. Ehri and Wilce (in press) studied kindergarten children who knew letter names and were beginning to link initial consonants in words to initial word sounds. They sought to determine whether teaching beginners to use all the letter sounds in three- or four-letter words would enable them to read and spell differently from children who lacked this knowledge. One group of subjects was taught to decipher 12 sets of similarly spelled pseudowords in a way that forced them to pay attention to variations in all letter positions. The other group rehearsed isolated letter-sound relations. Comparisons of the two groups' ability to read real words and to recall their spellings revealed substantial differences favoring the group that had acquired decoding skill. In this study, although all of the children had above average IQ's, 6 of the 15 subjects in the deciphering group failed to learn to decode, indicating that this skill is not easily taught. However, the fact that some subjects could be trained and that the training improved their word reading and spelling performance provides evidence for the contribution of an understanding of letter-sound mapping principles.

Bradley and Bryant (1983) obtained moderate correlations between preschool children's ability to detect phonemic similarities and differences in words and their reading and spelling ability measured four years later, rs =.44 to .57. They provided 40 lessons to three subsamples from the larger group of four-year olds. One group was trained to think about how the names of pictured objects shared phonemes. A second group was trained to use pictures and letters to relate print to sound. A third group was trained to categorize names of objects by meaning. The remaining subjects received no training. On reading and spelling tasks administered three years later, children in the first and second groups had significantly higher scores than children in the other trained and untrained groups. Children who received print-sound training (Group 2) outperformed children who received only sound training (Group 1). Bryant and Bradley conclude from their findings "that the awareness of rhyme and aliteration which children acquire before they go to school, possibly as a result of their experiences at home, has a powerful influence on their eventual success in learning to read and to spell" (p. 421).

In a study aimed at measuring word learning under two instructional conditions, Surber and Mason (1977) taught 40 children to recite a letter-sound rule (the long vowel, silent e rule) and to read one set of 13 words that appeared in the context of a story that was read to them. One set of words

matched the rule (e.g., cage, later) while the other set violated it (e.g., was, large). Each group recited their set of words from word cards and helped the examiner read the story containing the words. Although both groups learned to recite the long vowel, silent e rule and to read their set of words equally well, only the children who had read the story containing words which obeyed the letter-pattern rule were able to read the transfer words (new long a, silent e patterned words).

Another study was designed to explore the influences of both instruction and reading text. Juel and Roper-Schneider (1985) gave 93 non-readers 30 minutes of daily, scripted synthetic phonics instruction in addition to their daily basal instruction. Half the children were in a textbook characterized as having a variable vocabulary and emphasizing high frequency words. Half were in a textbook characterized as having a more controlled vocabulary of phonetically regular words. These differences were particularly evident at the preprimer level.

The authors found that while the two groups did not differ in their phonemic ability for items that had been taught, the group in the controlled vocabulary text generalized beyond the taught patterns significantly better than the other group. Each group adopted decoding strategies consistent with their texts. The controlled vocabulary group developed a word-family strategy and could read more words than the other group who relied more on visual strategies. Nonetheless, the groups performed equally

well on reading comprehension tests given at the end of first grade. It remains to be determined whether such differences might have an effect on later reading.

Evans and Carr (1985) compared ten classrooms implementing the British Infant School Model with ten that featured the use of commercial Basal lessons and accompanying reading textbooks and workbooks. Time sampling techniques in which children in every classroom were observed for four half days determined that independent activities dominated the Infant Model classrooms while teacher-led activities dominated the Basal classrooms. Significantly greater time was spent in the Basal classrooms on word analysis, printing, silent reading, and looking at printed display materials. Model classrooms spent more time orally reading the stories they had dicatated. Analysis of children's performance revealed differences favoring the Basal classrooms on reading and math achievement. No differences were found on measures of basic ability (e.g., verbal fluency, classification, social roletaking).

Differences favoring the Basal group are explained by Evans and Carr in terms of lack of effective instruction to build print-specific skills. Word analysis, silent reading, activities focusing on comprhension, the use of context to make predictions, and printing activities were positively correlated with reading. Among the classrooms observed, these activities more often occurred in the Basal than Infant Model classrooms, although the

authors comment that the Infant Model classrooms could have included those activities. They conclude that reading instruction varies along two dimensions, one being the extent to which reading is taught as a rule-governed translation task, and the other being the extent to which reading activities are systematically engineered, supervised with corrective feedback, and practiced. Both dimensions are important in reading acquisition.

Perfetti, Beck, and Hughes (1985) compared first graders' ability to synthesize and delete phonemes from words with their later reading. They found that phonemic knowledge and learning to read develop in mutual support. That is, phonemic awareness seems to lead to more successful reading, and reading activity to a greater understanding of phonemic knowledge. They concluded that it is probably not useful to describe the relationship in simple prerequisite terms. Reading itself "enables the child to analyze words and to manipulate their speech segments. It is not necessary to assume that he [the child] performs such manipulations on the orthography. Rather learning some orthographic principles through reading enables the discovery of parallel phonemic principles" (p. 45-46).

A substantial amount of research exists on this topic, and there are encouraging signs that instructional studies lead to different outcomes in reading. Still, a number of important, unanswered questions remain such as how to employ information

about children's word and letter recognition strategies to improve instruction. In some studies phonics instruction appears as the significant factor in later reading success; in others merely the presence of regular patterned words is effective; and in still others, the opportunity to read and reread or figure out the text is what matters. Each seems to foster the development of reading strategies, but whether each is as effective at particular points of development is not known. Clearly it is important for children to learn about letter-sound relationships, but not if the instruction sacrifices reading comprehension opportunities or independent reading activity.

Acquisition of Story-guided Concepts

How might reading stories to children benefit their literacy development? It is postulated that a critical aspect is the interaction between adults and children in what Vygotsky (1962) describes as the zone of proximal development, or the area between what learners know and what they come to know with assistance. Parents, teachers, and more capable children operate within this zone by scaffolding conversations (Cazden, 1979). They build one comment or question on the previous one and guide the learner to move from a situation where the task is carried out with others' help to one in which the child operates independently (Brown, 1985). In addition to scaffolding, literate others support learning by holding children accountable for their share of the communication interchange, guiding them

back to the question or subject under discussion. Parents establish routines which contribute to literacy, such as the bedtime reading and talking about shared events (Butler, 1979; Crago, 1975; Heath, 1982, 1986; Hiebert, 1986; Snow, 1983; Sulzby & Teale, 1984; White, 1954). Teachers establish equivalent school routines of story listening or "rugtime reading" and show-and-tell time (Bridge, 1986; Cochran-Smith, 1984; Holdaway, 1986; Mason, McCormick, & Bhavnagri, 1986).

Story reading at home. Studying language acquisition of six to ten year olds, C. Chomsky (1972) found a strong relationship between children's exposure to written stories and their rate of linguistic development. Kindergarten children who had been exposed to many books, particularly those that were linguistically complex, understood more complex language. To exemplify the relationship, Chomsky describes two kindergarteners of the same age and IQ. The child with a low linguistic comprehension score had not heard a single story during the previous week, according to parents' report. She was typically read to less than 1/2 hour per week and was familiar with very few complex stories. In contrast, a child with a high linguistic score had been read 17,500 words that week, was usually read to more than 2 hours a week, and frequently heard complex stories. Chomsky concludes that there is a distinct language advantage for children if they are read to frequently and hear a variety of rich and complex stories.

In more recent research with reading rather than language as the measure of accomplishment, Wells (1985) found that of all the tests he administered to children on entry at school, the one that had the highest correlation with overall reading attainment two years later was knowledge of literacy (r = .79, p < .001). Knowledge of literacy was defined by a cluster of highly correlated parent questionnaire variables that tapped parents' support for literacy before their children entered school. These included the number of books owned by the child, the child's interest in literacy, and his or her involvement in activities associated with literacy. The test and questionnaire variables were also significantly associated with the social class status of the family.

Close observation of parent-child bookreading sessions indicate their importance in language and reading growth. Ninio and Bruner (1978) analyzed mothers' dialogues that accompanied picture book reading to young children. They found that mothers direct the child's attention to particular features in a book, ask questions, provide labels, and give feedback by repeating or extending the child's remarks. Harkness and Miller (1982) found that mother-child interactions change over time. Although questions or comments to initiate book reading interactions are continued, mothers gradually increase the length of time between each interchange by reading longer text sections. Children become able to listen to stories for longer stretches of time.

Snow and Ninio (1986), who analyzed videotaped sessions of parents reading to their children, found that children learn many basic concepts about books through joint picture book reading sessions. Parents help children realize that books are for reading, not for manipulating, that the book is in control and the reader is led, that pictures in books are representations of things and events, that pictures can be named, and that events may be fictional and occur outside real time.

Joint picture book reading was studied by DeLoache and DeMendoza (1986) with 30 pairs of mothers and 12 to 18 month old infants. They report significant increases over age in requests by the mother for the child to say or do something, in her use of elaboration feedback, particularly to connect the story information with the child's experiences, and in her use of questions instead of labels or comments. Over the age span children become more able to respond to mothers' questions, to use verbal (compared with nonverbal) terms, and to initiate verbal interactions.

Pellegrini, Brody, and Sigel (1985) compared parent-child book reading interactions over age (4 and 5 years) and communication status (normal or speech disability). Analyses of 120 parents who each read two stories to their child revealed an effect for communicative status but not age. Parents of speech-handicapped children made fewer story-responding demands, paraphrased greater portions of the text, and gave more turns.

The authors conclude that parents adjust their interaction styles to their child's level of communicative competence.

Sulzby (1985) studied the emergent reading attempts of 24 children at the beginning and end of kindergarten as well as the reading attempts of two, three, and four year-old children. A comparison of the kindergarten data with those obtained from younger children revealed a developmental progression across age levels. Using familiar and unfamiliar stories, children were asked to read or pretend read the text. At first, stories were not formed. When they were formed, children used an oral language-like structure before they used a written language-like structure. Then, the printed information was watched, and as reading strategies were formed, independent reading began to occur. Sulzby concludes that children progress from a treatment of a book as discrete pieces to a whole unit and use first their own speech and then that of the author to weave a story across the pages. An important implication is that story-reading constructs are formed prior to an ability to read or even attend to print.

The effects of an interactive approach is seen in a study comparing early readers with non-early readers who were matched for age, intelligence test scores, and social class. Thomas (1985), extending the work of Snow (1983), found that early readers more often talked about literacy with family members and that their interactions contained more instances of semantic contingency (keeping a topic going), scaffolding, and

accountability (requiring the completion of a language interaction). The quality and quantity of interaction, not just the presence of reading materials and a storytime routine, was found to shape early reading development.

The studies reported here suggest how children benefit from story reading. Conducted primarily with middle class families, they indicate that adults act as scaffolds for children in story reading situations. As children become more competent, adults adjust their demands and require more complex information. Parents provide just enough support in story reading interactions to enable their childen to succeed, but no more. Children learn about how to identify story information, relate it to their own experiences, and form stories with written language structures.

Research with working class families suggests that their children seldom receive these experiences. Feitelson and Goldstein (in press) conducted a study in Israel comparing middle with working class families. They found that middle class homes had an average of 54 children's books whereas working class homes had an average of only five books. Middle class parents read to their children, beginning at age one, reading up to a half hour each day. In contrast, sixty percent of working class parents did not read to their children. Those that did, read infrequently, and often did not begin until their child was five years old.

Social class differences have also been found in this country. Teale (1986) observed three year old children from working class families. Although many occasions of literacy expression by the parents in the child's presence were observed, these did not necessarily involve children's participation and there were few occasions of parent-child story reading. Similarly, Anderson and Stokes (1984) who studied working class families found that story reading encompasses less than 2 percent of all literacy activities. While both of these studies show that literacy events such as reading the mail or looking at the TV guide do occur, a troubling finding is the infrequent occurrence of story reading. Other literacy events are not likely to yield the same benefits for the child as story reading.

Story telling as well as story reading is a less frequent occurrence in working class homes. Heath (1986) followed three children when they were between the ages of two and four. One child was from a mainstream, white, middle-class family, one was from a white, working class family, and one was from a black working class family. She observed four types of parent-child interactions surrounding the telling of events and narratives: Recounting, in which the child responds to adult requests or questions; accounting, in which the child constructs a personal account of events that the child experienced; event casting, in which the child produces a running narrative of an ongoing event; and story telling, in which the child tells imaginary stories by

elaborating on real or imagined events. The surprising finding was that these interactions were seldom observed in the working class families. Heath observed fewer than 60 such interactions in working class families but over 1500 interactions in the mainstream family setting. Heath found that these social class differences were carried into school, affecting children's later ability to talk about or to write stories.

Parents who foster story reading and story talk with their children are thought to ease the task of story reading comprehension (Cochran-Smith, 1983). While no direct evidence is yet available, the lack of parent-supported story activities in the preschool years is likely to be one source accounting for the difficulty that working class children exhibit in later grades in reading comprehension. However, verifying this connection is extremely difficult to do. Mainstream parents not only involve their children in more joint picture book reading and story telling than do working class parents, but also engage them in more language communication activities (Sigel, 1982; Hess, Holloway, Price, & Dickson, 1982). They own more children's books, model literacy more often, take their children to the library and on other outings more often, and discuss educational television programs with them more often (McCormick & Mason, 1984).

Another problem is that data gathering techniques are inadequate, according to Cochran-Smith (1983). Diary studies of

book reading by parents to their infants and young children typically omit explanations of how the data were collected, what were the settings for reading, or how the story reading process should be analyzed. They are conducted with one or a very few children, making generalization to other children difficult. Cochran-Smith reports that many experimental studies of story reading are also flawed. They have been conducted in unnatural, laboratory contexts, they measure a limited set of factors, and they often contain overly literal measures of listening and reading comprehension.

Available evidence suggests that a rich context for language learning and for understanding written stories is engendered with storybook reading. There are, however, enormous variations in the frequency of story activity at home. Mainstream families typically provide many more occasions of story talk as well as story listening and reading than working class families, and mainstream children are known to become more successful readers than those from the working class. Although additional research is needed to identify factors on the causal chain, a reasonable conjecture is that story reading at home makes an important, if not necessary, contribution to later reading achievement.

Story reading in school. There is stronger evidence for the importance of story reading in school-based studies. Feitelson, Kita, and Goldstein (1986) had teachers in low SES kindergartens in Israel read to the children three times a week for four

months. Matched control classrooms engaged in group games. Posttests indicated that children who were read to better understood stories, were more attentive to picture clues, were better able to infer causal relationships, and could tell more connected stories. In a second study, teachers of first grade children either read to their students for the last twenty minutes of each weekday or continue their standard reading and writing instruction. At the end of six months, several posttests were administered. These included oral reading of an unfamiliar expository passage, answering comprehension questions after silently reading five short texts, and telling a story from a sequence of four pictures. They found that children who were read to in school produced significantly fewer word reading errors, had higher comprehension scores, and used more complex language in story telling.

Observations of kindergartens in the United States indicate that teachers seldom use familiar print to introduce children to reading (Aukerman, 1984; Bridge, 1986) even though children as young as three years of age can identify environmental print words (Harste, Burke & Woodward, 1982; Harste, Woodward, & Burke, 1984). Furthermore, according to Bridge, children learn more sight words if they use predictable patterned language books to teach sight words instead of commercial basal text materials.

In a set of four studies McCormick and Mason (1984, 1986) found that helping children read easy stories after listening to

an adult read them can have long-lasting effects. The first study determined that an effective story reading method is to focus children's attention on the text meaning rather than words or letter-sound relations, to model story reading, and to read the text several times, gradually relinquishing control of the reading task to the children.

A second study with a Headstart classroom documented how repeated readings help children acquire the metacognitive skills of planning, monitoring, and evaluation of stories.

A third study measured the effects of book reading by comparing two groups of kindergarten children. One group received in the mail eight books that they were encouraged to read at home with their parents' help. A control group of classmates matched in IQ did not receive the books. At the end of the kindergarten year, tests of children's story reading ability, their spelling ability, and their ability to read words out of context revealed superior performance among children receiving the books and benefits that were maintained into first grade.

In the fourth study, school as well as home treatments were provided for experimental and control subjects. The school treatments were ten lessons of books for the experimental group to read and ten lessons of story listening with picture materials for the control group. Experimental subjects were sent home three packets of books during the Headstart year and six

more during kindergarten. Control subjects received the same number of mailings of materials, but the materials were pictures during the Headstart phase of the study and visual perception work sheets in kindergarten. Significant differences found at the end of the Headstart year and again a year later in kindergarten indicated that experimental children outperformed controls not only on story reading and word reading but also on letter-sound knowledge. As well, parents and teachers rated these children as having more knowledge about reading.

Why should story listening and repeated reading experiences affect children's letter-sound knowledge? One possibility is that adults enfold informal phonics and word reading lessons within story reading activity. Another is that the activity itself leads children to attend to and ask questions about words and letters.

To answer this question, four kindergarten teachers were videotaped as they read aloud a literature story. Children were individually questioned about their recall of the story and were asked to read four pages from the story. Analyses of story recall and probe questions showed substantial differences among children's story recall as a function both of early reading ability and of the teacher's approach to story reading. The most effective approach was that used by a teacher who read the story through once and then went through it again, helping children see the connections among the key ideas (Dunning & Mason, 1984).

Children also differed in their ability to read the exact words on the four pages. Those who performed better were children whose teacher occasionally asked them to identify words during the story reading and who pointed out how certain words could be identified from the picture or by thinking of the story meaning (Peterman, Mason & Dunning, 1985). Although this work is correlational and compares the natural variations among only four teachers, it offers support for the first explanation, namely that adults can affect children's word recognition through a focus on the print during story reading.

The second explanation, that reading and rereading causes children to ask questions about print, is also supported in a case study (Lartz & Mason, unpublished manuscript). Here, a story was read once and repeatedly discussed for 9 sessions with a kindergarten child. The adult limited her responses to answering questions raised by the child. After asking about the pictures and characters, the child eventually began to ask questions about the print and how to read the words. It may be significant that questions about the print did not occur until the story ideas had been thoroughly explored.

It is hypothesized that story reading activities acquaint children with complex information about written language forms and structures as well as strategies for reading. This can take place within the larger, more meaningful context because parents or teachers provide support by filling in and modeling the task

even though children are able to carry out only a small portion of it. As children become more competent, the adults make more demands and encourage children to take on greater portions of the task. In this way the story reading task need not be broken into instructional segments but left as a whole, enabling a focus on meaning and providing the opportunity to develop metacognitive and strategic approaches to reading.

Research needs to address some of the ways that explain how story reading activities, whether they involve listening, story discussion, story rereading and reciting, or skillful reading, help children understand how to read stories meaningfully. The interplay between story reading and word recognition with possible effects on phonemic awareness and later reading is important. How these might be better integrated in kindergarten and first grade instruction is an important question. Repeated reading activities, the use of familiar words and texts, word analyses during oral story reading, and story writing are possible approaches.

Implications of Emergent Literacy Research for Classroom Practices

Descriptive as well as experimental studies of individual children, small groups of children, classroom environments, and various home and school settings have begun to clarify the picture of how young children become literate. The overriding evidence is that many, if not most, literacy concepts are acquired through shared adult-child participation in reading and

writing activities. Literacy activities, which may be formally or informally provided, involve language interaction with children about literacy events as well as the use of meaningful tasks and materials. That is, the studies reviewed here point to the importance for literacy development in schools of language-rich social interactions and the use of meaningful tasks.

Language interactions. Language interactions between adults and children as well as among children are proposed to be vital to literacy development. When focused on reading stories to children, these interactions are very similar at home and school for middle class preschool children (Cochran-Smith, 1984). The interplay serves the dual functions of entertaining children and helping them acquire information. Parents are shown to use a scaffolding procedure which allows children gradually to shift from listening and talking about a story to reading or pretend-reading a story. Less information is available about how teachers structure story reading. However, storyreading time can be an "interactive negotiation" of the text in a social, conversational mode. Viable approaches to story reading that have been documented by researchers include reading and rereading of favorite stories, the use of caption or picture books, and reading of one's own written stories.

Literate adults foster the use of language to talk about and analyze language. Specific metalinguistic terms are used to

refer to language. The process is thought to help in the analysis of reading and writing concepts and tasks because elements of speech such as letters, syllables, function words, and new vocabulary are discussed. Analytic tasks among preschool children include alphabet naming games, rhyming and alliteration activities, word spelling games, and the "What's that?" and "Why" questions that all children ask. These are presumed to help children figure out how to break speech into words and words into phonemes and distinguish words meaningfully.

Typical home language activities of early readers and writers can be extended to schools in part by fostering peer interactions. For example, classroom activities can be arranged to encourage peer discussion of stories, establish opportunities for child authors to discuss their published stories with classmates, and advise others about written ideas (Hansen, 1986; Graves, 1983). Children can learn from each other through sharing insights, asking questions that might not occur to the already-literate teacher, and foster a genuine community of readers and writers. Teachers might also engage young readers and writers in language-rich activities such as words games, storytelling, riddles and rhymes (Mattingly, 1984), arrange for them to use metalinguistic terminology (Johns, 1984), and intersperse activities such as dictating stories, storytelling, and language play (Holdaway, 1979).

Teachers can organize reading lessons around peer interactions. For example, children in Hawaiian classrooms make substantial gains in understanding texts when they engage in the kind of talk-story social interactions that are similar to their social interactions at home (Au and Mason, 1981). As well, first-grade children's reading is influenced after only ten lessons, if it is structured to encourage peer teaching where children help each other with unknown words instead of working individually with the teacher (MacKinnon, 1959).

Application of successful home learning strategies to school settings needs extensive research. Although language transfer from home to school seems to be feasible and to have an effect on reading and writing progress, a single model for all children is probably not appropriate. Parent-child interactions and literacy experiences vary with culture, social class, and parents' education. While an effective model for mainstream children has been moderately well specified, the best language-to-literacy instruction for non-mainstream children will require more research before sound guidelines for teachers can be laid out. Some other lingering questions include why siblings in the same home environment often have varying reactions to parent and teacher literacy efforts, whether an initiation by the child instead of an adult is needed to advance literacy skill, or what activities prominant and effective in mainstream homes and schools might be used successfully elsewhere.

Meaningful literacy events. Drawing again from observations of mainstream parent-child literacy events, it appears that children usually carryout and benefit from meaningful literacy tasks. For example, children are known to write to communicate, make notes for themselves, label their possessions, and so on. They read to identify words, show off their reading skill to others, enjoy a story, or follow directions. Parents negotiate reading and writing events with children, so that favorite stories, familiar language, and enjoyable literacy activities are featured.

To foster meaningful literacy events in school, Goodman and Goodman (1980) recommend activities that build on children's interest in environmental print and that encourage reading and writing for communication. They suggest reading sign and labeled products, writing out conversations, and setting up classroom mailboxes for note passing.

Extensive use of books in school is another way to insure a focus on meaningful reading and thoughtful analysis of texts (Holdaway, 1979; Doake, 1985). Holdaway developed an activity he termed, Shared-Book Experience, in which children engage in a variety of talking, writing, reading and listening activities with favorite books that are read over and over. Bussis, Chittenden, Amarel, and Klausner (1985) recommend using many types of texts in the classroom so that children can gain control of the reading process through wide and varied reading. They

also recomend that children be helped to acquire knowledge, a role that includes teaching rules, helping with unknown words, discussing pertinent background information, and supporting attempts to negotiate print successfully.

Book-sharing activities may also lead to meaningful classroom literacy experiences. Hansen (1986) found that literacy was advanced when teachers encouraged children to share favorite books by reading, picture-reading, or retelling the contents, and also to share their own writing with classmates. Morrow and Weinstein (1985) found that a voluntary reading program in kindergarten classroom significantly increased children's use of books in school. Fielding, Wilson, and Anderson (1985) obtained a similar result with fourth graders. These literacy events might be important because children have the opportunity to read materials they find interesting.

A New Wave of Instructional Research

In this last section, we present examples of research that exemplify how teachers might scaffold literacy lessons and use language-rich and print-meaningful contexts to foster the development of effective strategies for reading and writing. While these studies are expressly limited to the particular children that were studied, there are encouraging signs that generalizable instructional techniques have been uncovered.

In an exemplary line of research linking emergent literacy to instruction, Clay (1979, 1982, 1985) developed a reading

recovery program for a special population of children. These children were the lowest performers in reading and writing in their schools after one year of instruction. Beginning with careful observation of good teachers teaching, Clay generated three guidelines for accelerating the progress of at-risk readers. The child should have many opportunities for teacher-child interaction in instruction; tasks should foster language use, be drawn from texts that the child can read, and involve practice of tasks where improvement is needed; and the child should be helped to develop flexible approaches to reading.

The program presented teachers with ways to integrate the reading and writing instruction and had them make extensive use of books and encourage independent reading. There were daily individual tutoring sessions of 30-40 minutes each.

A typical tutoring session included the following (Clay, 1985, p. 56):

- re-reading of two or more familiar books
- re-reading yesterday's new book and taking a running record
- letter identification (plastic letters on a magnetic board)
- writing a story (including hearing sounds in words)
- cut-up story to be rearranged
- new book introduced
- new book attempted

Teaching procedures were based on constant evaluation of each child's needs and abilities. Thus, children who had not interacted extensively with print were taught directionality and locating responses. However these activities were unnecessary for most children.

Clay studied 122 children from five diverse schools who were in the recovery program and compared them to their classmates (a total of 291 children). Teachers kept running records of the second reading of every new book introduced, recorded reading miscues and summaries of the strategies children used as they read, kept detailed lesson records of children's responses to tasks, and constructed graphs showing the progress of the children through levels of increasing text difficulty. Pre-posttests included measures of reading vocabulary, concepts about print, letter identification, writing vocabulary, and dictation ability. Of the 122 children who began the program, 80 returned to regular classroom instruction after an average of 13.5 weeks of instruction because their performance had reached that of their average-achieving classroom peers, and their teachers judged them to be capable of sustaining progress without special tutoring. Of the remaining 42 children, only seven did not seem to profit from the program. Four were non-English speaking, and three had physical or mental limitations. Statistical comparisons showed that "pupils who received individual tuition made gains which equalled or exceeded the gains made by their

classmates who showed initially the higher achievement" (Clay, 1979, p. 85).

A three-year follow-up study of 68 of the children (34 European, 24 Maori, and 10 Pacific Island) was most encouraging, given the general trend for children to stop progressing after remediation is terminated (Aman & Singh, 1983). Clay (1985) found that the European and Pacific Island children's average test scores were within the normal range in both reading and spelling even three years after discontinuing their programs. The Maori children also were at grade level in spelling, but were not making satisfactory progress in reading. This discrepancy led Clay to recommend more time in the program and more conservative discontinuation criteria for the Maori children.

The success of the New Zealand program prompted Huck and Pinnell (1985) to replicate the project in six inner-city schools in Ohio. They compared 70 at-risk children with their classroom peers and tested comparable children in control classrooms that had no Reading Recovery Program. They administered Clay's reading measures and added the reading components of the Stanford Achievement Test. The program was carried out for one year, during which about two-thirds of the children were successfully discontinued and returned to their regular classroom, matching the New Zealand results.

Not only did the Reading Recovery Program children surpass the control group of at-risk children, but also they made

significantly higher gains than their clasroom peers who had not needed remediation. Statistical analyses showed significantly higher gains for letter identification, concepts about print, reading level, word reading, reading comprehension, word study skills and SAT reading. Huck and Pinnell are now extending the program to other Ohio schools, and are following the children who were in the original program.

Our last example of innovative instructional research focuses on the social context for learning. In this case a target community itself was studied in order to design an effective reading instructional program. The Kamehameha Early Education Project (KEEP) in Hawaii has conducted our fifteen years of interdisciplinary research with the goal of improving native Hawaiian children's educational achievement (Tharp, Jordan, Speidel, Au, Klein, Calkins, Sloat, & Gallimore, 1984). The research draws on Vygotskian theory in which learning cannot be explained by looking only at the learner, but must include the context in which the learner has developed. In this research the context of native Hawaiian children was studied.

Research by linguists and anthropologists was designed to explain the socialization of Hawaiian children in their homes and among their peers outside of school. Comparisons were made of home and school culture, of the roles played by parents and teachers, and of the kinds of interactions children engaged in at home and in school. Linguistic analyses of children's production

and comprehension of Hawaiian and Standard English, its acquistion, and relationships to reading and cognition were also carried out.

A kindergarten through third grade reading and language arts program was created and has since been continuously modified. Children were tested and compared each year in order to determine whether their performance had improved to the level of non-native children in Hawaii. When the reading achievement goal of average performance was reached, the program was exported into the public schools. By 1984, 2000 elementary school students had been in the programs and had shown substantial improvements, with average standardized reading test scores at the 50th percentile for all subjects when collapsed across site and grade.

Instructional procedures involve assisting students in their reading performance through the zone of proximal development. The following correlaries are offered as instructional recommendations:

"Assistance should be offered by the teacher in those interactional patterns most likely to be accepted by the child.

"To the extent that peers can assist performance, learning will occur through that assistance, and peer-assisted learning should be promoted.

"Careful assessment is necessary in order to delineate two points relative to the zone of proximal development: the

'developmental' level of individual competence and the 'instructional' level of assisted competence" (pp. 116-117).

The instructional principles and procedures that foster reading are the following: (a) Work and social contexts of the classroom are made compatible with those of the home and community. (b) Comprehension of the text, rather than mechanics of reading, is the reading instruction goal. (c) Children are helped to increase their facility with Standard English and general linguistic/cognitive skills. (d) Instruction is individualized and student progress monitored continuously. (e) Teachers are trained and their performance in the classroom monitored.

The authors warn that the educational community should not focus on the particular instructional approach that has resulted from their research but rather on the process used to do the research. This is because the program was developed in terms of and for local Hawaiian children. Until work with other groups has been carried out, recommendations should be restricted to the method of research, not to the method of instruction. Regarding method of research, the authors recommend that a base of research about children in their own culture and school be created; second, that an effective program in a laboratory school be developed; and finally, that the program be expanded into public schools.

Conclusion

The contributions of emergent literacy research to instruction have both clarified and complicated the task of understanding the processes of learning to read and write. It has been proposed that while learning to talk, read, and write are inextricably bound and mutually facilitative processes, they can be expressed through the use of unique as well as overlapping strategies. Social and linguistic contexts for learning play profound roles in the course of literacy development. Literacy concepts revolve around two components, phonological awareness and story understanding, which are acquired through informal as well as adult-directed home and school activities.

The research that is needed to verify these proposals is infinitely complex and must extend beyond the classroom lesson. We see the need for studies of formal and informal interactions of learners with peers and adults in order to understand the roles played by each participant. Observations of home and community settings are needed to determine how varying linguistic and cultural contexts affect reading and writing development. Interviews and observations of children as they attempt to read and write may determine the strategies children have available for learning, the background knowledge they can use, and the ways that reading and writing can be intertwined in school instruction. Connections between early home literacy influences and school instructional effects are needed, probably through

evaluation of causal models using data that stretch over several years during the time children are learning to read and write. Literacy acquisition in home and school can then be studied so as to measure reading progress in ways that integrate word recognition and sentence comprehension with the contexts for learning and to measure writing progress beyond spelling and letter formation.

Our review of emergent literacy across cultures, languages, and cognitive disciplines reveals many common findings. Literacy goals, both personal and public, do affect learning. Parents who play crucial roles in assisting literacy have children that come to school prepared for reading instruction. Phonological awareness, knowledge of print-speech relations, and story reading experiences all contribute to later reading success. There are compelling examples from the United States, New Zealand, and Hawaii of effective literacy programs based on a sound understanding of literacy acquisition. There remains a need to study other successful literacy programs and to evaluate the literacy needs of less successful groups of readers, thereby acquiring deeper insights about what instructional procedures can be generalized. As Tharp et al. (1984) concludes, "Applied developmental research forces the collection of locally valid knowledge. This base of knowledge can then serve as the valid data for an eventual higher-order analysis. The paradox returns: Applied developmental research, through its localism, may provoke

a valid universalism" (p. 134). By separately studying and then pooling knowledge about divergent readers and writers, a universal understanding of literacy development in young children may someday be achieved.

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